

plant-forms. The finest specimens strew the beach in June and July, when the new season's lamina has reached its maximum growth. The stout stipe is usually only 12–18 inches in length, and not more than 10 mm. in diameter, usually less. A point of interest is seen in the fact that many individuals, not different so far as can be seen from others, yet have mucilage-ducts in the stipe—a feature which has been largely utilized in delimiting “species.” Interest also centres in the peculiar corrugation of the fronds; the “bullation” as it was termed by older writers who only knew plants of quiet harbours, with undulated “midrib” region and lateral waved folds or “bullæ” of Gmelin, and Stackhouse (1795). All stages in the intensity of such corrugation may be seen in one fine specimen, the amount being greater at the base of the lamina and passing into a close system of irregular corrugations, which, in the limit, extend right up to the margin of the lamina. A fine lamina 8 inches or more in width, corrugated finely and closely right up to the straight margin, resembles a piece of wrinkled thick leather-belted, and is like no other British plant. Smaller forms, similarly corrugated, from exposed shores of the Faeroes, have been distinguished as var. *linearis* Børgesen (1903); but there is nothing “linear” about these fine plants, again wholly different from the general illustrations of the type, as for example the feeble specimens of the Phyc. Brit. pl. 289, with no bullation at all.

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## NEW OR NOTEWORTHY FUNGI.—PART VI.

By W. B. GROVE, M.A.

(PLATE 550.)

THIS notice of New or Noteworthy Fungi is a continuation of Part V, which appeared in the *Journal of Botany* in July and August, 1916. The new British fungi contained in the list owe the greater part of their interest to the exceptional keenness of sight possessed by Mr. D. A. Boyd, of Salteats, Ayrshire, by whom most of them have been discovered. That part of Scotland is exceedingly rich in Fungi Imperfecti. There are also included a few species discovered by the late Dr. J. W. Ellis, of Liverpool, who sent them to me shortly before his much lamented death. The Birmingham Natural History Society has kindly made a grant, from the Endowment of Research Fund, towards defraying the cost of the plate. I owe thanks also to Miss E. M. Wakefield, of Kew, and others, for help in various ways.

### ASCOMYCETES.

#### 253. *Mycosphærella Cydoniæ*, sp. n.

Maculis nullis. Peritheciis hypophyllis, in greges parvos rotundatos digestis, rarius sparsis, ca. 100  $\mu$  diam., subglobosis, nigris, nitidis, immersis, dein papilla crassa emergentibus; contextu e cellulis laxis atro-fuscis inequalibus conflato. Aseis oblongo-cylindricis v. subelavatis, utrinque obtusissimis, aparaphysatis, fasciculatis, ca. 45  $\times$  5  $\mu$ ; sporidiis plus minusve oblique monostichis, subinde parte superiore

distichis, obovoideis, uniseptatis, leviter constrictis,  $7-10 \times 2\frac{1}{2}-3 \mu$  (ut plurimum  $8 \mu$  longis), hyalinis, eguttulatis, loculo inferiore angustiore. (Tab. 550, f. 1.)

*Hab.* in foliis aridis emortuis humi jacentibus *Cydoniæ vulgaris*, Hereford, vere, 1917-18 (Maio, etc.).

The perithecia are confined to the lower surface, and, though they are sometimes concealed amidst the tomentum, more often the part occupied by them is nearly glabrous. In the winter the perithecia are to be found, but spore-less: the asci mature as summer approaches. On pressure, the group of asci emerges from the perithecium as a globular fasciculate coherent cluster, consisting of 200 or more, and reminding one strongly of those of *Sphærulina abbreviata* on *Rubus*. The texture of the perithecial wall is unusually loose and irregular. This species is near to *Sphaerella Pomacearum* Sacc., but differs from the insufficient description of that in several important particulars.

254. LEPTOSPHERIA GALIORUM Sacc. Syll. ii. 22.

f. *Dipsaci*.

Peritheciis subgregariis, tectis, globuloso-depressis, nigris,  $\frac{1}{6}-\frac{1}{5}$  mm. lat., ostiolo papillato erumpente; ascis clavatis, longiuscule stipitatis,  $90 \times 14 \mu$  (part. sporif.), paraphysatis, 8-sporis; paraphysibus clavulatis, crassis, hyalinis, minute guttulatis, subseptatis, inæqualibus; sporidiis oblique monostichis v. subdistichis, oblongo-fusoideis, obtusis, sæpe curvulis, initio luteis, grosse biguttulatis, dein triseptatis, brunneis, subopacis,  $21-23 \times 5\frac{1}{2}-6\frac{1}{2} \mu$ , ad septa vix v. perparum constrictis. (Tab. 550, f. 2.)

*Hab.* in caulibus emortuis *Dipsaci silvestris*, Salwarpe, prope Droitwich, Julio.

255. NECTRIA MAGNUSIANA Rehm, Ascum, no. 436. Sacc. Syll. ii. 486.

Status conidicus (*Tremella aurantiaca*):—Sporodochia densely crowded (20-40 together in one disc), angular by mutual compression, surface at first convex, then depressed, wrinkled or unilobate, soft, outside reddish-brown, disc orange-scarlet,  $\frac{1}{8}-\frac{1}{4}$  mm. diam. Spores allantoid,  $5-6 \times 1 \mu$ , very numerous; sporophores long, about the same width, many times fasciculately branched.

Parasitic on the disc of the tubercles of *Diatrypella faracea* C. & DN., on branches of *Betula alba*, from a dead trunk lying on the ground in Gt. Barr Park (St.), May.

The shape of an average sporodochium would be well represented by a model of a human molar tooth. Although the fungus was very abundant, more than six feet of the branches of the host being occupied by the many tubercles of the *Diatrypella* and nearly every tubercle being covered and almost obliterated by the *Tremella*, yet not a single ascophore of the *Nectria* could be found. Nevertheless there can be no doubt of the identity of the fungus.

256. HYPODERMA DESMAZIERI Duby, Hyster. p. 42, pl. 2, f. 22. Sacc. Syll. ii. 786.

Perithecia amphigenous, but mostly epiphyllous, scattered in long

rows, immersed, oval or elliptical, up to  $\frac{1}{2}$  mm. long (or rarely 1 mm.), convex, covered by the blackish striated epidermis, somewhat shining, lips rather swollen, closely appressed, leaving a scarcely discernible longitudinal fissure. Asci broadly clavate, somewhat attenuated towards the apex, sessile,  $50-70 \times 10-12 \mu$ . Spores distichous, varying from elliptic-oblong through lanceolate to nearly linear, obtuse above, tapering slightly downwards, often cloudy or 2-5-guttulate, but sometimes quite hyaline, occasionally curved,  $24-28 \times 2-4 \mu$ , at first surrounded by a broad perfectly hyaline mucous coat; paraphyses numerous, filiform, flexuose,  $1-1\frac{1}{2} \mu$  broad, slightly longer than the asci, often curved and thickened at the apex.

On dead leaves of *Pinus Strobus*, Bagley Wood, Oxon., April (A. D. Cotton). Each peritheciium is surrounded while young by a narrow dark grey area, which is bounded by a thin black line; afterwards the whole becomes black. A few globose colourless spermatia,  $3-4 \mu$  diam., were seen mingled with the asci. Though this account differs from that of Duby in some respects, there can be no doubt that the species is correct.

#### 178. LACHNEA COPRINARIA var. MINIMA Gr.

Having since found better specimens of this, in a more mature state, I have to record that it now seems to me to be nothing but *Ascobolus barbatus* M. & C. in its early stages. This species is described as being intermediate between *Lachnea* and *Ascobolus*. The statement made in the *Transactions of the British Mycological Society*, vol. iv, p. 367, note, could not possibly be true.

### CELOMYCETES.\*

257. PHYLLOSTICTA CAMELLIÆ Westd. in Kickx, Flor. Crypt. i. 416. Sacc. Syll. iii. 25.

*P. camelliæcola* Brun. Misc. Mycol. p. 13. Sacc. Syll. x. 101.

Spots large, roundish or oblong, up to 25 mm. wide, whitish-grey, with a narrow thickened blood-red border, visible on both sides of the leaf. Pycnidia epiphyllous, immersed, globose, papillate, black,  $150-300 \mu$  diam., piercing and at length bursting the epidermis. Spores ovoid-oblong, biguttulate,  $4-5 \times 2-2\frac{1}{2} \mu$ .

On living leaves of *Camellia japonica*. Ward End Hall, near Birmingham, Dec. 1885.

It is obvious, on comparing the descriptions of the two supposed species with these specimens, that they are one and the same; large and small pycnidia occur on the same spot, closely intermixed.

258. PHYLLOSTICTA CORYLI Westd. Bull. Acad. Belg. xix. no. 1. Sacc. Syll. iii. 31.

Spots scattered over the leaf, rather large, fuscous-ochraceous, then dingy whitish. Pycnidia lens-shaped,  $100-150 \mu$  diam., pierced

\* The descriptions of the Cœlomycetes (*i. e.* Sphaeropsidales and Melanconiales) herein given are part of those prepared for a work on that group of British Fungi, now well advanced. See *Kew Bulletin*, 1917 and 1918.

by a pore; texture smoky-yellow. Spores ellipsoid, rounded at both ends, biguttulate,  $7-8 \times 2-3 \mu$ .

On living leaves of *Corylus Avellana*. West Kilbride, Ayrshire (D. A. Boyd). July.

Accompanied on the same spots by *Labrella Coryli* Sacc., of which it seems to be an early stage, for all possible sizes and shapes of spores could be found between those of the *Phyllosticta* and the typical spores of the *Labrella*.

259. *PHYLLOSTICTA ERICÆ* Allesch. in Syd. Beitr. zur Kennt. Pilzfl. Brand. Hedwig. xxxvi. p. (178).

Pycnidia scattered, few on each leaf, epiphyllous, covered by the epidermis, then erumpent and subsuperficial, globose-depressed, black,  $100-150 \mu$  diam.; texture variable, sometimes *Phyllosticta*-like, sometimes thicker and darker. Spores oblong or shortly cylindrical, rounded at both ends, often biguttulate,  $4-5 \times 1\frac{1}{2}-2 \mu$ , when older eguttulate,  $7-10 \times 2-2\frac{1}{2} \mu$ .

On dead leaves of *Erica Tetralix*. West Kilbride, Ayrshire (Boyd). Jan.

The dead leaves are reddish-brown. Sydow considered this fungus to be a dangerous parasite on *E. carnea* in a nursery in Berlin, gradually discolouring and killing the leaves. Mr. Boyd's specimens differ in having the pycnidia entirely epiphyllous, not mostly hypophyllous as Sydow describes them; the spores also are slightly different.

260. *Phyllosticta lychnidina*, sp. n.

Maculis amplis, marginalibus, 10-25 mm. diam., ochraceo-fulgineis, denique centro pallidioribus, vix marginatis. Pycnidiis amphigenis, copiosis, sparsis, rotundis, lenticularibus, innatis, nigrescentibus,  $100-120 \mu$  diam., epidermidem poro nonnihil transigentibus; contextu pallide fusco, circa porum obscuriore. Sporulis oblongis, utrinque rotundatis,  $4-5 \times 2 \mu$ .

*Hab.* in foliis vivis *Lychnidis dioicæ*, West Kilbride, Ayrshire (Boyd), Jul.

The texture of the pycnidium is that of a true *Phyllosticta*, but the fungus is evidently not a more developed state of *Depazea Lychnidis* Fr., though it might be an early stage of *Ascochyta Lychnidis* Lasch, of which nothing is known.

261. *PHYLLOSTICTA PLATANOIDIS* Sacc. Syll. iii. 13.

Spots none or indistinct. Pycnidia hypophyllous, densely gregarious, collected here and there into groups, immersed, blackish, globose,  $60-100 \mu$  diam., pierced by a pore; texture thin and transparent, pal.-brown. Spores rod-like, straight, cylindrical,  $4-6 \times \frac{1}{2}-1 \mu$ , rounded at each end, where there is usually an indistinct guttule, and for that reason appearing subconstricted in the middle.

On fading cotyledons of *Acer Pseudoplatanus*. West Kilbride, Ayrshire (Boyd). June. Accompanied by *Phleospora Aceris* Sacc., the two often occurring on the same spot. The spots, which are roundish and about 4-5 mm. broad, seem then to be those made by

the *Phleospora*, the pustules of which are amphigenous, but the pycnidia of the *Phyllosticta* are entirely hypophyllous and occur for the most part in a dense border round the spots. I have specimens of *Phleospora Ulmi* Wallr. which are equally accompanied by a *Phyllosticta*.

Mr. Boyd's specimens have spores in all respects identical with those of the fungus which has been already recorded under no. 241 (Journ. Bot. 1916, p. 219) as *Leptothyrium Platanoidis* Pass., and in the Staffordshire specimens that was also accompanied by the *Phleospora*. Comparison of these with examples of the *Phyllosticta* received from Sydow show that they are all forms of the same fungus, although the pycnidia differ somewhat in texture; and it would seem therefore that, at least so far as the British specimens are concerned, the "*Leptothyrium*" is a state of the *Phyllosticta* with pycnidia less complete below, and that both may be genetically connected with the *Phleospora*. Possibly, also, they may be stages of a *Mycosphærella* like *M. latebrosa* (Cooke), for the beginnings of an ascophorous stage with perithecia deeply immersed were occasionally observed.

It was noticeable that most of the pycnidia had the pore situated just beneath a stoma; this habit can be observed in many others of the Sphærospidales.

262. PHYLLOSTICTA PUNCTIFORMIS Allesch. vi. 129.

*Phoma punctiformis* Desm. in Ann. Sci. Nat. 1849, xi. 283. Sacc. Syll. iii. 145.

Pycnidia amphigenous, but chiefly epiphyllous, numerous, scattered, without any distinct spots, subglobose, papillate, covered by the epidermis, which is at length penetrated by the pierced ostiole, blackish-brown, 125–200  $\mu$  diam.; texture pale-brown, thin, darker round the pore. Spores narrow-oblong, 4–6  $\times$  1½  $\mu$ , but variable.

On fading leaves of *Lychnis dioica*. Largs, Ayrshire (Boyd). Sept.

The pycnidia are visible to the naked eye as black dots spread pretty uniformly all over the leaf, and not only on the faded parts. The texture of the pycnidium supplies a real reason why this species should be placed in *Phyllosticta*, not the shallow futile reason alleged by Allescher.

263. PHOMA ANCEPS Sacc. Syll. iii. 120.

var. POLYGONI var. nov.

Pycnidiiis gregaris v. in imo caule dense effusis, ca. 100  $\mu$  diam., lentiformibus, orbicularibus, nigris, sub epidermide nidulantibus, dein plus minusve erumpentibus; contextu molli parenchymatico fuligineo irregulari. Sporulis bacillaribus vel anguste oblongis, utrinque rotundatis, at basi subangustioribus, 2–4-guttulatis, 11–15  $\times$  2–2½  $\mu$ , sed interdum usque 20  $\mu$  longis, sporophoris similibus, brevioribus et subangustioribus suffultis.

*Hab.* in caule *Polygoni cuspidati*, in Horto Botanico, Birmingham, Martio. Inter *P. ancipitem* et *P. bacillarem* Sacc. quasi media.

## 264. PHOMA SANTONENSIS Sacc. et Syd. Syll. xiv. 868.

Pycnidia somewhat crowded, and then often embedded in a thin black stroma, but also often standing singly, subglobose, black, about  $250\ \mu$  diam., the loosened epidermis becoming whitish above the minute projecting ostiole, at length erumpent at the apex. Spores oblong, eguttulate, rounded at the ends,  $6-7 \times 2\ \mu$ ; sporophores not visible.

On dead twigs of *Ilex Aquifolium*, in company with *Camarsporium Ilicis* Oud. Quinton (Ws.). March.

## 265. PHOMOPSIS ALNEA v. Höhn. Fragm. Mykol. no. 87, p. 33.

*Phoma alnea* Sacc. Syll. iii. 98.

Pycnidia scattered or gregarious, globose-depressed, covered, at length bursting the periderm by a short longitudinal slit, blackish, up to  $\frac{1}{3}$  mm. diam. Spores lanceolate-fusoid, acute at both ends, occasionally biguttulate,  $7-10 \times 2-3\ \mu$ ; sporophores subulate, crowded,  $15-20 \times 1-1\frac{1}{2}\ \mu$  rising from a thick soft olivaceous-brown stratum. (Tab. 550, f. 4.)

On twigs of *Alnus glutinosa*. Cheshire; Chatsworth (Ellis). May, June. The pycnidium of *Diaporthe alnea* Fekl.

## 266. PHOMOPSIS CORTICIS Grove.

*Phoma corticis* Fekl. Symb. Myc. p. 378; Fung. Rhen. no. 1943! Sacc. Syll. iii. 76.

*Macrophoma corticis* Berl. et Vogl. Syll. Addit. p. 312. Sacc. Syll. x. 201.

? *Rhabdospora ramealis* Sacc. var. *crassiuscula* Berl. Pug. Fungh. Fior. p. 85. Sacc. Syll. x. 388.

Pycnidia oblong, immersed in the cortex, very convex, placed longitudinally, black, each surrounded by a deep black shining stain, up to  $\frac{1}{2}$  mm. long, covered by the epidermis, which is raised and whitish at the summit and at length burst by the thick ostiole. A-spores fusoid,  $6-7 \times 1\frac{1}{2}\ \mu$ ; sporophores long, subulate, crowded, curvulous; B-spores (= *P. corticis* Fekl.) linear, straight or bent, subobtuse at the ends,  $20-25 \times 1-1\frac{1}{2}\ \mu$ , on shorter sporophores.

On dead stems of *Rubus*, Meols, Cheshire (Ellis)! March, 1915. On living branches of *Rubus fruticosus*, Germany (Fuckel)! ? On dead branches of the same, Italy (Berlese), *n. v.*

The pycnidia are often incomplete in the way usual to a *Phomopsis*; sometimes a few of them are included in an area which is bordered by the narrow black line significant of a *Diaporthe*. The Cheshire specimens yielded only the A-spores, but the pycnidia of Fuckel's specimens are exactly identical in size, shape, and arrangement, though they are younger and on living stems: they have the true *Phomopsis* character and (though it is not certain) there can be little doubt that they represent the B-spores of the same species. Fuckel is wrong in giving the width of his spores as  $3\ \mu$ ; on examination of his exsiccatum it is seen that they seldom reach even  $2\ \mu$ , and none of them were ever seen to be guttulate, as he describes. It is incorrect to unite them with *Septoria ramealis* Rob. et Desm. Crypt. Fr. no. 2189! (Ann. Sci. Nat. 1853, xx. 94), though the spores are very similar. Desmazières' species is seated on pale

bordered spots (wanting in the *Phomopsis*), and is a true *Septoria*, not a *Rhabdospora* as Saccardo places it in Syll. iii. 580. It has a complete thin-walled plectenchymatous pycnidium; the spores are cylindrical, straight or curved, finely guttulate and at length pseudo-triseptate,  $20-27 \times 1\frac{1}{2}-2 \mu$ . But what Berlese calls the var. *crassiuscula* seems from the description more likely to be identical with Fuckel's species, though this is mere surmise; in that case both *R. ramealis* and its variety have been wrongly placed.

#### 267. PHOMOPSIS ERES Grove.

*Phoma Eres* Sacc. Mich. i. 521; Syll. i. 631.

Pycnidia scattered, conico-convex,  $250-300 \mu$  diam., blackish, covered by the periderm and only after a long time erumpent by a pore. A-spores elliptic-fusoid, acute at both ends, biguttulate,  $9-10 \times 2\frac{3}{4}-3 \mu$ ; sporophores linear, straight, simple, crowded,  $18-20 \times 2 \mu$ ; mixed with them a few B-spores,  $25-30 \times 1 \mu$ .

On dead twigs of Elm. West Kilbride, Ayrshire (Boyd). Dec. Cooke's specimens under this head are incorrectly named.

This is a very typical *Phomopsis*, the pycnidial wall being of the usual imperfect character. The young pycnidia, situated in the cortex, are surrounded by a white zone of densely felted mycelium, composed of much-branched hyphæ. There is, in some cases, a thin black line deeply penetrating the wood below the fungus: this is probably the beginning of the *Diaporthe*-stage. There cannot be the slightest doubt that this is the true species of Saccardo; Nitschke, who saw the B-spores, described them as curved,  $33 \times 1 \mu$ , and recognised them as a pycnidial stage of his *Diaporthe Eres* (Pyr. Germ. p. 245), but he observed that they always appeared in different pycnidia from the A-spores. Whether *Phoma oblonga* Desm. is really the same as the latter, as Saccardo suggests, is not certain.

#### 268. PHOMOPSIS PUSTULATA Grove.

*Phoma pustulata* Sacc. Syll. iii. 91.

Pycnidia rather scattered, long covered by the periderm, pustular, convex,  $\frac{1}{2}-1$  mm. diam., roundish, seated on the wood, at length erumpent at the summit. A-spores oblong-fusoid, pluriguttulate, somewhat obtuse at the apex,  $10-14 \times 2\frac{1}{2}-3\frac{1}{2} \mu$ ; sporophores acicular, colourless, about as long as the spore: B-spores numerous, filiform, curved or hooked,  $15-20 \times 1-1\frac{1}{2} \mu$ , mixed with the A-spores.

On dead branchlets of *Acer Pseudoplatanus*. Stewarton, Ayrshire (Boyd). Dec.

The pycnidium of *Diaporthe (Chorostate) pustulata* Sacc., which occurred with it on the same branchlets. As usual with the pycnidia of the subgenus *Chorostate*, the A-spores incline towards *Fusicoccum*. The perithecia were in groups of 4-12, erumpent by a slit; each had a rather thick slightly protruding papillate and umbilicate ostiole, and otherwise agreed exactly with Saccardo's description of *D. pustulata*; the groups were surrounded by a black line which penetrated the wood. The ascospores closely resembled the A-spores, but were larger, constantly 4-guttulate, and slightly constricted at the septum.

## 269. PHOMOPSIS SUBORDINARIA Trav.

A large quantity of this was gathered on *Plantago lanceolata* at Earlswood Lakes station, in October last year. In these specimens the B-spores far outnumbered the A-spores which occurred in the same pycnidia; they were of the usual character, straight, curved, flexuous, bent, or hooked, about  $20-23 \times \frac{3}{4}-1 \mu$ . This makes another species in which both kinds of spores have been found; the list of such, given in the *Kew Bulletin*, 1917, p. 50, must now be increased by the following:—

<i>Phomopsis corticis</i> .
„ <i>Eres</i> .
„ <i>pustulata</i> .
„ <i>quercella</i> .
„ <i>subordinaria</i> .

Moreover in that article, p. 66, it was stated that the phenomena described by Diedicke, due to the parasitic habit of this species, had not been observed in Britain. Hardly were these words in print when they became untrue: the exact course of events described by him was seen for the first time in two places near Birmingham. The curved peduncle with its drooping spike was very noticeable, and has since been met with as early as June; the pycnidia are to be seen on the curved part while the spike and the lower part of the peduncle are still fresh and vigorous. Evidently one of those things to be found easily when one knows what to look for. The following species of *Phomopsis* may now be regarded as parasitic:—

- P. abietina*, on *Pinus*, etc. (see no. 271).
- P. aucubicola*, on *Aucuba*.
- P. corticis*, on *Rubus*.
- P. Stewartii*, on *Cosmos*.
- P. subordinaria*, on *Plantago*.

## 270. PHOMOPSIS VEPRIS v. Höhn. Fragm. Mykol. no. 87, p. 33.

*Phoma vepris* Sacc. Syll. iii. 76.

Pycnidia gregarious, small, round, immersed, globose-depressed, blackish, about  $200 \mu$  diam., at length just piercing the epidermis. Spores fusoid,  $5-7 \times 1-1\frac{1}{2} \mu$ ; sporophores crowded, linear, erect, hardly longer than the spore, rising from a yellowish fertile stratum.

On dead stems of *Rubus*, Eastham Rake, Cheshire (Ellis). The pycnidial stage of *Diaporthe vepris* Fekl. et Nits. The pycnidia here also are incomplete, but do not resemble those of *P. corticis*, so that it seems possible that the two species are different in spite of their similarity; the sporophores especially are different. The British specimens in Herb. Kew under this name do not belong to *Phomopsis* (see *Kew Bulletin*, 1917, p. 71), but Dr. Ellis's certainly are correct.

## SCLEROPHOMA Died.

A genus resembling *Phoma* in most respects, but it is without an ostiole and the lower part of the pycnidium is filled with a well-developed stroma, consisting of cells similar to those which form the mass of a sclerotium. There are no sporophores, the spores are seated



directly on the stroma; this at length resolves itself into a mucilage in which the spores remain embedded.

It seems likely that several species now classed with *Phoma*, such as *P. enteroleuca* Sacc., will turn out on investigation to belong to this genus. The stroma here is not external to the pyrenidium, as misconceived by Stevens.

271. *SCLEROPHOMA PITHYA* Died. Pilz. Brand. ix. 280 (? *non* v. Höhn. Fragm. Mykol. 1909, no. 402).

*Phoma pithya* Sacc. Mich. i. 126; Syll. iii. 73.

*Phoma Cembræ* Karst. Fragm. xxii. p. 2.

? *Phomopsis pithya* Lind, Dan. Fung. 1913, p. 421 = *Phoma abietina* Hartig (1888) = *Fusicoccum abietinum* Prill. & Delacr.

*Sporonema strobilinum* var. *ramulorum* Vesterg. Oefv. K. Vet. Ak. Förh. 1897, p. 45. Sacc. Syll. xiv. 1000.

Pyrenidia scattered or irregularly gregarious, covered by the bark, then semi-erumpent, globose, not papillate but rounded above and mouthless, 300–500  $\mu$  diam., at length nearly superficial; contents whitish; texture thick, rather solid, parenchymatous, smoky-brown. Spores at first obovoid, 6–7  $\times$  2–2½  $\mu$ , then obovate-fusoid, 7–9  $\times$  2½–3  $\mu$ , at length distinctly fusoid, acute at one or both ends, 9–12  $\times$  3–4  $\mu$  (or even 5  $\mu$ ), sometimes guttulate, generally straight but sometimes inequilateral, seated directly on a dense mass of nearly colourless cells that ultimately become reduced to a mucus, which is often faintly tinged with brown and in which the spores are embedded; no definite sporophores. (Tab. 550. f. 3.)

On small dead branches of *Pinus silvestris*, King's Lynn (Plowright); Cheshire (Ellis). On the same, Edgbaston Botanic Gardens, Birmingham. Mar.–Apr. Plowright's specimens were sent to me so long ago as 1881, mixed with *Cenangium Abietis* Rehm, but remained unnoticed till this year.

Said to be the pyrenidial stage of *Diaporthe pithya* Sacc., this species has been placed in *Phomopsis*, to which our specimens certainly cannot belong on account of the entire absence of the remarkable persistent sporophores which are characteristic of that genus. For the spores are seated on a mass of cells of a subsclerotoid nature, in this respect resembling *Plenodomus*, but in the latter the sclerotoid cells do not resolve themselves into mucus, as they do in *Sclerophoma*.

*Phoma Cembræ* Karst. is undoubtedly the young state of the *Sclerophoma*, before the spores assume the fusoid form, and *Phoma pithya* Sacc. is the more advanced state. *Phomopsis pithya* Lind, with its synonyms, cannot be the same fungus, as asserted by Lind; the species classed under those names has long sporophores and is a true parasite, doing great harm to numerous Conifers (*Abies*, *Juniperus*, *Picea*, *Pinus*, *Pseudotsuga*), but the *Sclerophoma*, so far as at present known, appears to be only saprophytic. *Phomopsis pithya* Lind should be called *Phomopsis abietina* (Hartig).

*Sporonema strobilinum* Desm. has very similar spores (Tab. 550. f. 8), but they are borne on long subulate or filiform often branched sporophores, and the upper part of the pyrenidium at last falls away, leaving a naked disc. Its variety *ramulorum* Vesterg., however, is

certainly a form of the *Sclerophoma*, since its habitat is on dead branches of Pine, and its sporophores are expressly described as obsolete, and the texture assigned to the pyrenidium is that of *Sclerophoma*. There are thus two similar but distinct Fungi occurring on Pine—a *Sclerophoma* and a *Sporonema*, and in all probability a third species, a *Phomopsis* or a *Fusicoccum*, similar at first sight, but differing in essential characters.

272. *DOTHIORELLA FRAXINEA* Sacc. & Roum. Rel. Lib. iv. 90, f. 43. Sacc. Syll. iii. 236.

Pyrenidia subglobose, clustered, erumpent, subconfluent, the mass often flattish or convex or mamillate with the indistinct ostioles, black, up to  $\frac{1}{2}$  mm. diam., closely surrounded by the fragments of the bark; contents whitish. Spores oblong-elliptic or subclavate, sometimes inequilateral, frequently tapering at the ends,  $8-10 \times 2-2\frac{1}{2} \mu$  ( $12 \times 5 \mu$ , Sacc.), rarely with an indistinct guttule; sporophores not seen.

On bark of Ash. Lichfield. Feb., 1887.

The spores differ, but this is probably merely a state of Saccardo's species. Externally it exactly resembles *Botryodiplodia Fraxini*, of which it is the early stage, standing to it in the same relation in which *Dothiorella pyrenophora* stands to *Botryodiplodia pyrenophora*. This relation seems to be parallel to that which the species of *Microdiplodia* hold to those of *Diplodia* on the same hosts.

273. *Cytospora Myrtilli*, sp. n.

Conceptaculis sparsis, minutis, tectis, dein ostiolo vel disco erumpentibus, nigrescentibus, 1-5 in stromate atro-cinereo usque 600  $\mu$  diam. congregatis, nucleo albo, disco minuto, pruinoso, cinereo-albido, ostioliis atris, sæpius non præminentibus, pertuso. Sporulis allantoideis, curvulis,  $4-4\frac{1}{2} \times \frac{3}{4}-1 \mu$ , sporophoris confertis, plerumque simplicibus, rectis,  $30-40 \times 1 \mu$  suffultis.

*Hab.* in ramulis emortuis *Vaccinii Myrtilli*, West Kilbride, Ayrshire (Boyd), Mart. 1918.

The slightly convex pustules of the cinereous stroma show dark through the epidermis, which is at length pierced at the centre, it may be by a simple blackish ostiole, it may be by a whitish pruinose disc in which lie 1-5 pierced round ostioles.

(To be continued.)

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## JOSEPH ANDREWS AND HIS HERBARIUM.

(Continued from p. 261.)

### II. THE HERBARIUM.

BY G. S. BOULGER, F.L.S.

ANDREWS'S herbarium consists of ten fascicles, the first seven now in Linnæan order, the eighth apparently unarranged, the ninth consisting of Pteridophytes, and the tenth of Cellular Cryptogams. This last contains the series of "Curious sea Plants taken between